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Of Phosphorus as a remedy in disease.

Before commencing a detail relative to the medical properties of Phosphorus, it will not, perhaps, be amiss to give a short account of its chemical history.

Phosphorus is said to have been discovered by one Brandt, a citizen of Hamburg, in his researches for the philosophers stone. The process of preparing it was kept as a profound secret for a long time, till discovered by the celebrated Boyle, who promulgated it to the world, and claimed the right and honour of its discovery.

It would be unnecessary for me to enter into a minute account of its character or chemical history, as all that I could say, has already been elaborately detailed by almost every chemical writer. However, the following short account of its external characters, and chemical preparation, are taken from different chemical authors.

Phosphorus is an inflammable substance, and is known by the following external characters.

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It has generally a flesh red colour, but, when carefully purified, may be obtained free from colour, and perfectly transparent. Its specific gravity is 1.77.

It is so soft that it readily yields to the knife. It melts at about 90° Farenheit, and boils at 550°. When melted, it must be covered with water, in order to prevent it from inflaming.

In the atmosphere it emits a white smoke and peculiar smell; and a faint and beautiful light arises from it; but those appearances do not take place in air artificially dried.

Phosphorus is inflamed by the application of a very gentle heat. According to Dr. Higgins, a temperature of 60° is sufficient to set it on fire, when perfectly dry. It burns when heated to about 148°. with a brilliant light, a white smoke and a suffocating smell.

It may be set on fire by friction. Rub a very small bit between two pieces of brown paper; and the phosphorus will inflame, and will set the paper on fire also.

Phosphorus may be obtained from various substances, both animal and vegitable; tho' most commonly from bones and urine, but in greater abundance from the former. The process

for procuring it are also numerous.

The following process which is most commonly employed, I presume, is simplest, most expeditious, and from which a greater abundance of the article is obtained.

Take a quantity of bones of adult animals, burn them to whiteness in an open fire, and reduce them to a fine powder. Upon three pounds of this powder, after having been put into a matrass, there may be poured three pounds of concentrated sulphuric acid of commerce; four or five pounds of water must be afterwards added by degrees to assist the action of the acid. The whole is then to be left in a gentle heated sand bath, for about twelve hours, or more, taking care to supply the loss of water which happens by vaporation. The next day a large quantity of water must be added, the clear water afterwards decanted, and the rest strained through a cloth or sieve. The residuary matter is to be edulcorated by repeated effusions of hot water, till it passes tasteless. The whole fluid gradually vaporated in a flat earthern basin, to the consistence of syrup. It is then to be mixed with an equal weight of charcoal powder, and submitted to distillation in an iron or earthern retort. Instead of applying a receiver,

the neck of the ~~receiver~~ retort may be immersed in a basin of water, to a small depth, and the phosphorus as it comes over, will fall in drops to the bottom.

In this process, the sulphuric acid unites with the calcareous earth of the bones, and forms sulphate of lime; and the phosphoric acid of the bones becomes disengaged, and remains dissolved in the liquor. The charcoal at an elevated temperature takes the oxygen from this acid, and carbonic acid gas is formed; and phosphorus passes over.

The application of phosphorus to the cure of disease, I believe, is not of very long date.

It was first used as a medicine in particular diseases by the French. But on account of its violent action on the system, which generally occurred even in the minutest dose, and which was not easily restrained, and the fatal effects it occasionally produced, it was either universally abandoned, or held as an unruly and dangerous remedy.

After a considerable time it was again revived in England, and like most new and powerful medicines it promised fair, during the enthusiasm of the moment, under the genial warmth of medical probation, to become a prompt and

valuable remedy in many intractable diseases. But unfortunately its existence was of short duration, or, at least, it shared pretty nearly the same fate as it did on its first appearance.

A long lapse of time now intervened in which it was sunk into oblivion, or heard nothing of as a medicine. But about 20 years ago the attention of the medical world was again excited to this medicine; when the medical ~~world~~ journals of Europe teemed with communications of its undoubted medical virtues in various diseases. "It was extensively employed in the French military hospitals in low fevers and with a view of checking gangrene from wounds &c. Nearly at the same time the physicians of different countries seemed to have been busily engaged in experimenting with it in the diseases already mentioned, and also, in the whole of the nervous and spasmodic affections, to which may be added, gout and Rheumatism, dropsy, amenorrhoea, impotency, uterine hemorrhages, and finally, in arresting the effects of the mineral poisons, as lead, arsenic &c."*

Phosphorus like other powerful medicines requires caution in its administration, for an improper or disproportionate dose, produces dangerous

* Dr. Chapman's Therap: & Mat: Med:

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nervous energy.

Phosphorus, it was once thought to be a most [illegible] diffusible stimulant, producing the whole system in a few hours after its administration, an [illegible] in the nervous energy, increasing the circulation, augmenting animal temperature, promoting the secretions, particularly of the skin and kidneys, imparting [illegible] like insanity, raising the spirits, increasing venereal desire, and rousing the mind to an exaltation and felicity.*

Several experiments have been made with phosphorus both on the human and animal subjects.

[illegible] made an experiment upon himself, he swallowed three grains of phosphorus with some [illegible]. There is much reason to think that he was not killed by it, as phosphorus does not remain more in than what is contained in the stomach, [illegible] in such a manner [illegible] through that organ. In taking [illegible] he found himself [illegible] tormented, [illegible] drank [illegible] of cold water. [illegible]

* Ed. Dispensatory [illegible]

[illegible] felt in its upper [illegible] same as [illegible].

[illegible] magnitude to this [illegible] would not reproduce more [illegible] consequences, is almost incredible; but as it appears to come from respectable authority, and in conformity of knowledge with the rules, it would be unjust either to deny [illegible] it.

Taking the [illegible] experiments on a dog, to which he gave six [illegible] phosphorus, [illegible] after he began to run about the room, exhibiting much anxiety, and seemed desirous to go out. He [illegible] vomited the [illegible] which he had eaten; upon this the dog appeared impatient to get out. The [illegible] of the phosphorus, however, must be [illegible] the vomited matter. The dog [illegible] again [illegible] it. He immediately became extremely lively, springing from one table to another. Another piece of meat containing eight grains of phosphorus, was thrust down his throat, [illegible] vomited it again; he did not, however, exhibit the same anxiety to leave the room [illegible] he had done on the first time. But would probably [illegible] the disease [illegible] much [illegible] killed the [illegible], had escaped from the room [illegible] it readily. His inclination to sleep [illegible]

[illegible] pest, nothing was too high or too distant to reach; [illegible] there would be might become again [illegible] [illegible] during the apartment. He [illegible] vomited once or twice; but since that time has remained perfectly well.

It is evident that this enormous dose of [illegible] would have inevitably destroyed the animal, had he not immediately vomited it up, and on coming in contact with the atmosphere it would ~~before~~ in a measure so completely [illegible], before he swallowed the poison a second time.

Dr. Chapman states that during his residence in Edinburgh with Dr. [illegible] [illegible], he made some experiments on rabbits, and was led to conclude that the [illegible] [illegible] [illegible] in these animals, [illegible] [illegible] inflammation was uniformly found in the alimentary canal [illegible] both. And contrary to what has been said, he was unable to perceive that the urinary [illegible] in the least increased, the most sensible effect was a constant and distressing discharge of urine.

Dispensing the [illegible], [illegible] [illegible]

of [illegible]. At this [illegible] the pulse and patient-
[illegible] Mr. [illegible] [illegible]. I gave a considerable [illegible]
dose; he remained tolerably quiescent for about thirty
minutes, when I repeated the dose. Soon after he became
exceeding [illegible] and exhibited symptoms of great
uneasiness, attended with a sense of nausea; he
remained in this condition for about [illegible] minutes,
when he vomited a quantity of white and very tough
viscid froth; he vomited several times afterwards,
which appeared to be nothing more than the contents
of his last meal mixed with a little froth. After this
he became [illegible] and appeared to have [illegible]
better recovered. He remained perfectly free from
[illegible] unpleasant symptoms for three or
four hours, when [illegible] another dose. Soon
after he again was sick, and vomited [illegible]
[illegible]; he [illegible] with [illegible] as at first
in the commencement. He had none of that [illegible]
[illegible] as the [illegible]
[illegible] in the experiment of Dr. [illegible]
him in [illegible] with the
first dose [illegible]
[illegible]. He could not have taken less, but he [illegible]
[illegible] of the first [illegible].

[illegible]
[illegible]

as the administration of phosphorus; and accordingly [illegible] [illegible] of Strasburg, it [illegible] [illegible] on phosphorus, it appears that the vehicle in which the article is most commonly given, dissolved and its unpleasant taste and smell disguised and prevented, is Sulphuric Ether. In this vehicle he asserts, that the caustic properties of phosphorus is changed into a mild and [illegible] substance. He further asserts, that [illegible] the solution is a small quantity of distilled aromatic oil, that not only the efficacy of the remedy is improved, but it is also more easily preserved; and less subject to decomposition. A dose of [illegible] in a little syrup or on a lump of sugar.

It [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] making the whole into an emulsion, [illegible] its taste and odour are disguised.

It has been recommended also, however, it is not to be taken to reduce it to powder by constantly rubbing, but its volatile is reduced, and to triturate this powder, [illegible] [illegible] dissolved it [illegible] intimately with oil and sugar in the [illegible] [illegible].

When taken in this way in the form of a pill, [illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] It is a dangerous remedy. [illegible] is [illegible] and sometimes done. It is exceedingly [illegible] [illegible] [illegible] retained in the stomach, is not a dangerous prescription.

The [illegible] ing with small doses and [illegible] to increasing them [illegible] to complete [illegible] [illegible] again at a dose.)

The [illegible] [illegible] better [illegible] to give in a larger dose. [illegible] [illegible] a day and [illegible] [illegible] and [illegible] matter. It ought never to be taken in an empty stomach, [illegible] [illegible] after the patient has taken some [illegible] [illegible] [illegible] [illegible] [illegible] drink [illegible] [illegible] [illegible] is proper. [illegible] the thirst [illegible] [illegible] with [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] medicine [illegible] [illegible] [illegible].

The [illegible] [illegible] when [illegible] [illegible] [illegible] [illegible] apple [illegible] with [illegible] [illegible] [illegible] [illegible] [illegible] may be taken; but, in [illegible] [illegible] [illegible] digestion is not impaired [illegible] but [illegible] matter,

the [illegible] or [illegible] bread, rice, sago, [illegible] or the light vegetables such as carrots, French beans, [illegible] but the [illegible] turnips, onions, radishes, ripe [illegible] must be avoided, causing a sensation of [illegible] in the region of the [illegible] & the stomach, together with nausea, insupportable heat, and often vomiting and diarrhoea. The bed must neither be too hot nor too cold. Heat and [illegible] are to be prohibited.

When the patient [illegible] convalescent, it is of great importance to be on his guard against catching cold, which is apt to occasion vertigo and diarrhoea or a relapse. Convalescents should wear a flannel shirt next to the skin, the [illegible] the [illegible] in [illegible] with persons taking phosphorus, particularly in disorders of the nervous system, but these must stay above a month or [illegible] it.

Phosphorus, [illegible] the most powerful [illegible] remedies [illegible] would conclude, a priori, that it is a valuable medicine in all low and nervous diseases, when the vital powers are almost exhausted by disease, and in the debilitating [illegible], or malignant typhus fever &c.

In such cases therefore phosphorus has been mostly employed, and in which it has displayed its best effect.

[illegible] Letter [illegible] from our [illegible] physicians in the cold stage of [illegible], [illegible] other remedies proved ineffectual, [illegible] have [illegible] and the phosphorus. He [illegible] that [illegible] a perspiration [illegible] patient in the cold stage, [illegible] the [illegible] [illegible] were [illegible] in the [illegible] bowel remedies usually employed in similar cases, were used by this remedy. A peculiar expectoration, and a severe gastric complaint, [illegible] about in the body [illegible] its [illegible] [illegible], supposed to [illegible] [illegible] was restored to health [illegible] [illegible] with the [illegible] of convalescence.

[illegible] the definition of Cholera in the the latest American edition of Webster's Dictionary, [illegible] [illegible] [illegible] to have been [illegible] [illegible] which are translated from a medical work by Dr. Wolff, who graduated at Gottingen in the year 1791 and who states that these cures were extracted from the private diary of his father, a physician of eminence in Prussia.

[illegible] [illegible], [illegible] as much as [illegible] it they point out the fundamental [illegible] in cases of cholera, in which the patient

expressed extravagantly [illegible], and yet they appear to be taken from the journal of a distinguished practitioner of long and extensive experience, I hope it will not be trespassing on your patience [illegible] one or more of them.

He states to have been called to a woman about 25 years of age, whom he found in a low state of delirium. Her pulse was small, weak and trembling, almost vanishing, as it were, under the fingers. Her whole chest and arms were disfigured with red spots. Her neighbours and attendants informed me, says he, that she had been seized with a fever of a very violent kind about nine days before I saw her, and that her attending physician finding his remedies ineffectual, had deserted her, declaring that God alone could cure her.

Her case appeared to me, continues he, to be one of those desperate states of disease, in which a practitioner ought to refrain from doing anything, or to make trial of some new, bold, and powerful remedy which might act as an uncommon stimulus to the nerves, and rise their suppressed power. [illegible] expected [illegible] accordingly [illegible] [illegible] in [illegible] other, which contained [illegible]

[illegible]. They were applied in succession [illegible] [illegible] time, and the patient swallowed a teacupful of an infusion of [illegible] after them. In the course of the [illegible] afternoon, the tendency to change [illegible] [illegible] patient. Repeated the dose [illegible] they were [illegible] posed when the pulse began to rise, and the skin to be diffused with an equal heat; immediately [illegible] no pain became [illegible], a breathing sweat, [illegible] habitually ~~ab~~ absent, and at the same the [illegible] were subsided.

[illegible] [illegible] a third dose [illegible] [illegible] [illegible] [illegible]; a number of red spots then appeared on the skin and the patient complained [illegible] [illegible] [illegible] of oppression and pain about the precordium and in the abdomen. These symptoms [illegible] [illegible] to [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] which [illegible] [illegible] [illegible] [illegible] [illegible]. The [illegible] Bark completed the cure.

Another case [illegible] [illegible] young lady, who [illegible] time [illegible] [illegible] [illegible] [illegible] seized with [illegible] fit succeeded by [illegible] [illegible] heat, accompanied with delirium. The [illegible] was [illegible] and [illegible] [illegible] [illegible], and [illegible] [illegible] [illegible]. She was treated with the [illegible] as in the other case and

[illegible] [illegible] in it.

A young woman [illegible] [illegible] [illegible] [illegible] was seized with a violent chill & symptoms which indicated a profuse [illegible] [illegible] [illegible] [illegible] with great anxiety. the [illegible] was almost totally suppressed and she began to grow delirious: she was [illegible] [illegible] [illegible]ing.

A woman of a [illegible] [illegible] [illegible] [illegible] with a diarrhoea of a serious kind, but [illegible] [illegible] eight days in the course of a [illegible]. The [illegible] was Ipecacuanha, attended with [illegible] [illegible] [illegible] cured by this article.

Dr [illegible] Chapman in his [illegible] on Dewees' Midwifery, states that he used [illegible] in one case of [illegible] attended with a [illegible] torpor of the system, accompanied with a [illegible] decrease of temperature; but its use was interrupted too soon, by the prejudice of the patient, [illegible] of its [illegible]. [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] with [illegible] [illegible] [illegible] [illegible] A [illegible] [illegible] [illegible] [illegible] [illegible] Moreover, [illegible] [illegible] that when well [illegible], [illegible] [illegible] [illegible] [illegible] the usual remedies.

All practitioners [illegible] [illegible] [illegible] but

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Mr. Mitchell, whose veracity and talents, both as medical and scientific, are entitled to the highest respect and confidence, informs me that on a voyage to the East Indies, acting as physician and surgeon to the ship's crew, being somewhat circumscribed with regard to medicines, he was obliged to use phosphorus in the cases of intermittent fever, in all of which he accomplished a speedy and radical cure. In one case, however, arterial action was excited to so high a degree that he was forced to use the lancet liberally freely. He gave it a few hours before the expected paroxysm, and always completely suspended it or mitigated its violence.

As a diuretic resource, does not phosphorus promise to do good in many diseases attended with a general atony of the system, or even of particular parts? Under the same circumstances, does it not promise to do good in many of the nervous diseases, as paralysis, epilepsy, chronic mania &c?—